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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,214	12/29/2000	Sudipto Neogi	042390.P99975	8876

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EXAMINER

ANDUJAR, LEONARDO

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/751,214

Applicant(s)

NEOGI ET AL.

Examiner

Leonardo Andújar

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01/13/2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-13,23 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-13,23 and 25-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I claims 1-14 and 23-27 in Paper No. 6 is acknowledged.

### ***Acknowledgment***

2. The amendment filed on 1/13/2003, paper no. 8, in response to the Office action mailed on 10/08/2003 has been entered. The present Office action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1-3, 5-13, 23 and 25-27.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 5-7, 11, 13, 23 and 25-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Tao (US 6,410,981).
5. Regarding claim 1, Tao (e.g. fig. 3) shows a package comprising:
  - A substrate 3 with an inner surface to which a die 4 is to be attached, forming electrical connections 6 through the substrate, between the die and the exterior of the package (col. 1/lls. 39-42);

- A lid 1 with an inner surface facing the inner surface of the substrate;
  - Thermal attach 7 disposed between the die and the inner surface of the lid;
  - And sealant 2 disposed between the substrate and the lid in a pattern with at least one break 11 in the pattern remaining subsequent to the substrate and the lid being assembled together.
6. Regarding claim 2, Tao shows that the package is a ball grid array package (fig. 3).
7. Regarding claim 3, Tao discloses that the substrate is a pin grid array (col. 1/ll. 42).
8. Regarding claim 5, Tao shows vent holes 10 formed through the lid (e.g. fig. 7)
9. Regarding claim 6, Toa shows that sealant is disposed between the lid and the substrate is a substantially rectangular patter with at least one break (5A).
10. Regarding claim 7, Tao shows that the rectangular pattern has four breaks, one in each side of the substantially rectangular pattern.
11. Regarding claim 11, Tao teaches that substrate is susceptible to absorbing moisture and the pressure existing between the substrate and the lid is a result of moisture being released within the package by the substrate and being converted to steam (col. 1/lls. 43-62)
12. Regarding claim 13, Tao teaches that the die attached to the substrate using controlled collapsed chip connections 8.
13. Regarding claim 23, Tao (e.g. fig. 3) shows a package comprising:
- A substrate 3 with an inner surface;

- A lid 1 with an inner surface facing the inner surface of the substrate;
  - A die 4 on which electronic circuit is disposed, enclosed between the substrate and the lid, and attached to the inner surface of the substrate which provides electrical connections the die and the exterior of the package (col. 1/lls. 39-42);
  - Thermal attach 7 disposed between the die and inner surface of the lid;
  - And sealant 2 disposed between the substrate and the lid in a pattern with at least one break 11 in the pattern remaining subsequent to the substrate and lid being assembled together.
14. Regarding claim 25, Toa shows that sealant is disposed between the lid and the substrate is a substantially rectangular patter with at least one break (5A).
15. Regarding claim 26, Tao shows that the rectangular pattern has four breaks, one in each side of the substantially rectangular pattern.
16. Regarding claim 27, Tao teaches that the die attached to the substrate using controlled collapsed chip connections 8.

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
18. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tao (US 6,410,981).

19. Regarding claim 8, Tao discloses most aspects of the instant invention including a rectangular pattern having four breaks, one in each side of the substantially rectangular. Tao does not explicitly disclose that the four breaks comprise a minimum 10% of the rectangular pattern. Nonetheless, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In *re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). The specific length of the break claimed by applicant, i.e., a minimum 10% of the rectangular pattern, absent any criticality, is only considered to be the "optimum" length of the break pattern disclosed by the Prior Art that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy, manufacturing costs, etc. (see *In re Boesch*, 205 USPQ 215 (CCPA 1980)).

20. Regarding claim 9, Tao shows most aspects of the instant invention. However, Tao does not disclose that the sealant pattern is shaped to include breaks at the corners. Nonetheless, this limitation, absent any criticality, is only considered to be an obvious modification of the shape of the sealant pattern disclosed by Prior Art as the courts have held that a change in shape or configuration, without any criticality, is within the level of skill in the art as the particular shape claimed by applicant is nothing more than one of numerous shapes that a person having ordinary skill in the art will find

Art Unit: 2826

obvious to provide using routine experimentation based on its suitability for the intended use of the invention. See In re Dailey, 149 USPQ 47 (CCPA 1976).

21. Regarding claim 10, Tao discloses most aspects of the instant invention including a rectangular pattern having four breaks, one in each corner of the substantially rectangular pattern. Tao does not explicitly disclose that the four breaks comprise a minimum 10% of the rectangular pattern. Nonetheless, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). The specific length of the break claimed by applicant, i.e., a minimum 10% of the rectangular pattern, absent any criticality, is only considered to be the "optimum" length of the break pattern disclosed by the Prior Art that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy, manufacturing costs, etc. (see In re Boesch, 205 USPQ 215 (CCPA 1980)).

22. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tao (US 6,410,981) in view of Harper.

23. Regarding claim 12, Tao discloses most aspects of the instant invention including a wiring substrate 3. Tao does not disclose the substrate comprises an organic material. Harper discloses that polyimides (organic and insulating) are extensively used in the electronic industry (i.e. multiplayer circuit board, chip carrier, laminates, flexible

Art Unit: 2826

circuits etc) because they have good heat resistance and good electrical properties at high temperatures (page 1.9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Tao's substrate of polyimide (organic and insulating) in order to provide an insulating material having good heat resistance and good electrical properties at high temperatures as taught by Harper.

### ***Response to Arguments***

24. Applicant's arguments with respect to claims 1-3, 5-13, 23 and 25-27 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action. Papers related to this application may be submitted directly to Art Unit 2826 by facsimile transmission. Papers should be faxed to Art Unit 2826 via the Art Unit 2826 Fax Center located in



Art Unit: 2826

Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2826 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2826 Fax Center is to be used only for papers related to Art Unit 2826 applications.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Leonardo Andújar** at **(703) 308-0080** and between the hours of 9:00 AM to 7:30 PM (Eastern Standard Time) Monday through Thursday or by e-mail via [Leonardo.Andujar@uspto.gov](mailto:Leonardo.Andujar@uspto.gov). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached on (703) 308-6601.

27. Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 305-3900**.

28. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass (es): 257/683, 778,796; 438/108, 124	03/03
Other Documentation:	
Electronic Database(s): East (USPAT, US PGPUB, JPO, EPO, Derwent, IBM TDB)	03/03

**Leonardo Andújar**

Patent Examiner Art Unit 2826

LA

3/20/03

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